DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20350-1000

SECNAVINST 3960.6
OP-461
October 12 1990

SECNAV INSTRUCTION 3960.6

From: Secretary of the Navy

Subj: DEPARTMENT OF THE NAVY POLICY AND RESPONSIBILITY FOR TEST, MEASUREMENT, MONITORING, DIAGNOSTIC EQUIPMENT AND SYSTEMS, AND METROLOGY AND CALIBRATION (METCAL)

Ref: (a) SECNAVINST 4855.1 of 10 Sep 79 (NOTAL)
(b) MIL-STD-1309 of 18 Nov 83
(c) OPNAVINST 5000.42C of 10 May 86 (NOTAL)
(d) SECNAVINST 5231.1B of 8 Mar 85
(e) OPNAVINST 5000.49A of 30 Jan 87 (NOTAL)

1. Purpose

a. To establish policy and responsibility for incorporating testability and diagnostic capability into weapons platforms, weapon systems, surveillance, communications, navigational guidance, deception/protection systems, meteorological systems, and associated support systems.

b. To establish policy and responsibility for the selection, development, acquisition, standardization, application, and logistics support of test, measurement, monitoring, diagnostic equipment and systems.

c. To implement reference (a) as it pertains to the Department of Navy Metrology and Calibration (METCAL) Program, and to assign responsibilities within the Department of the Navy for METCAL. The definitions of reference (b) pertain.

2. Cancellation. SECNAV Instruction 3960.4A and SECNAV Instruction 4355.11C.

3. Discussion. The increasing complexity of weapons platforms, weapon systems, and operational systems; especially in terms of their electronic subsystems and components, has given added importance to the Navy's test, monitoring, and diagnostic capability and the need for improved measurement assurance. In addition, reduced manning levels may be offset by the use of more efficient test and diagnostics. New technology has provided the opportunity to substantially improve weapons platforms, weapon

systems, and operational systems diagnostic capability, minimizing false alarms and unnecessary removal of equipment, while significantly shortening the time required to detect and isolate faults. The implementation of improved diagnostic capabilities requires that testability and diagnostics considerations be an integral part of the design process and necessitates attention to measurement and calibration requirements early in the development cycle. The goal of support systems design is to achieve the optimum combination of off-line and embedded support based on factors such as cost, logistics, reliability, and maintainability. Managerial emphasis, and the transitions of new technology, is required to provide an improved diagnostic and measurement capability.

4. Applicability. This instruction applies to all components of the Department of the Navy (DON) responsible for (a) design, acquisition, operation, and logistic support of weapons platforms, weapon systems, operational systems and associated support systems; and (b) design, acquisition, use, and logistic support of test, measurement, calibration, monitoring, diagnostic equipment and systems.

5. Policy. It is DON policy to provide the organizational, intermediate, and depot maintenance levels with diagnostic capabilities to detect and isolate faults to design threshold levels and to ensure all testing and measurement equipment used for quantified measurements is maintained and calibrated at the lowest practical maintenance level. Specifically:

a. For Test, Measurement, Monitoring, Diagnostic Equipment and Systems it is DON policy to:

(1) Incorporate diagnostic capability thresholds into the requirement document process of reference (c). Include the test and evaluation of this diagnostic capability in the Test and Evaluation Master Plan (TEMP) as part of the Weapon System Test and Evaluation. Planning for weapon system diagnostic capability shall be initiated early in system development and continue through deployment of the system.

(2) Design weapons platforms, weapon systems, operational systems, and associated support systems diagnostic capabilities, including operational readiness monitoring, as an integral part of system engineering and integrate it with the MIL-STD-1388 (NOTAL) Logistic Support Analysis process. Design for testability shall meet MIL-STD-2165 (NOTAL). Systems already in production should base their implementation on a life cycle cost benefit analysis.

(3) Ensure that diagnostic capabilities, including built in test (BIT), for each level of maintenance are consistent with the operational mission and intended use of the applicable systems. General purpose test equipment shall be used where possible. Commercially available test equipment and systems shall be used if they meet environmental requirements imposed by the operational mission and can be logistically supported. Automatic Test Equipment (ATE) should be standardized as much as possible. The Consolidated Automated Support System (CASS) is being developed as the Navy's standard ATE. Systems acquisition managers (program managers) will study and determine if and when it is economically practical to transition to CASS. Until then, they will continue to use their present test equipment. In the future, use of non-CASS ATE will require Assistant Secretary of the Navy for Research, Development, and Acquisition ASN(RD&A) approval. New ATE shall not be acquired if the requirements can be satisfied by CASS. Acquisition and life cycle costs must be considered during the design and acquisition process and in performing diagnostic capability trade-offs. Test Program Set (TPS) development and distribution costs shall be included in the life cycle cost of ATE for acquisition planning.

(4) Under reference (d), off line ATE equipment is exempted for the procedures normally followed in acquisitions of automated data processing (ADP) equipment.

(5) Establish management systems to monitor workload and use of high value test equipment and test program sets, to ensure visibility and control of test equipment and test program set assets commensurate with test requirements at each maintenance level, and to accommodate shifts in test workload.

(6) Ensure, to the maximum extent feasible, that contractors use the same diagnostic capability that will be used under operational conditions to perform factory diagnostics for units under production. This applies specifically to ATE for field, depot, and factory testing.

(7) Use the current version of Common Abbreviated Test Language for All Systems (C/ATLAS), Institute of Electrical and Electronic Engineers (IEEE) Standard 716 (NOTAL) to develop automatic test equipment test program sets intended for fleet use.

(8) Ensure test and diagnostic equipment and associated software, is accompanied by Integrated Logistics Support (ILS) planning per reference (e). This planning shall address the full range of ILS needed to ensure that maintenance, calibration,

training, and spare parts support is available upon Initial Operating Capability (IOC).

(9) Ensure the accuracies of test and measurement equipment are commensurate with the accuracies of systems or instruments being supported.

b. For Metrology and Calibration it is DON policy to:

(1) Invoke MIL-STD-1839, "Calibration and Measurement Requirements" (NOTAL) in all pertinent development or procurement contracts to ensure measurement and calibration requirements are identified as part of the Integrated Logistics Support (ILS) process. These requirements shall be identified early in the design and acquisition of weapon systems and test and measurement equipment.

(2) Prescribe calibration requirements for calibration standards and test and measurement equipment.

(3) Ensure adequate accuracies are maintained in standards of measurement to ensure optimum performance of test and measurement equipment.

(4) Ensure that individual measurement results can be traced through an unbroken chain of calibrations to accepted references (U. S. National Standards, Natural Physical Constants, Ratio Type Calibrations, Consensus Standards or National Standards of Other Countries which are correlated with U. S. National Standards).

(5) Promote economy by prescribing accuracies for lower level facilities commensurate with the accuracies of instruments being calibrated. Calibration shall be performed at the lowest echelon commensurate with cost feasibility, equipment use, and user requirements.

(6) Ensure the optimum use of intraservicing within DON, and interservicing with other Department of Defense (DoD) components and Federal agencies, to obtain the maximum benefit from available calibration facilities and eliminate duplication.

(7) Invoke MIL-STD-45662, "Calibration Systems Requirements" (NOTAL) or extracts in all pertinent procurement contracts to require suppliers to establish a calibration system acceptable to the Government as part of their quality program or inspection system.

(8) Provide management and technical data required to

administer the METCAL Program and to monitor the quality of metrology assets.

c. DON will actively support Joint Service initiatives, including the requirements of reference (a), to improve the interservice coordination, efficiency, and effectiveness of calibration capabilities and initiatives under the auspices of the Joint Logistics Commanders in the metrology and calibration, automatic testing, and diagnostic disciplines.

d. DON will establish Research and Development programs necessary to meet current and future needs in diagnostic and metrology/calibration technologies.

6. Responsibilities

a. Chief of Naval Operations. Exercise overall direction to implement this policy within the Department of the Navy, except for the Marine Corps. In carrying out these responsibilities, the Chief of Naval Operations will:

(1) In conjunction with ASN(RD&A), implement the policies for management, coordination, and technical direction contained in paragraph 5.

(2) Monitor execution of the above policy guidelines.

(3) Ensure that this policy is incorporated in applicable documents.

(4) Sponsor a Navy-wide diagnostic and calibration technology research and development program.

(5) Maintain a single point of contact in the Navy for the subject Test, Measurement, and Diagnostic Equipment (TMDE) and Metrology and Calibration (METCAL) Programs.

b. Commandant of the Marine Corps

(1) In conjunction with ASN(RD&A), implement the policy contained in paragraph 5.

(2) Monitor execution of the above policy guidelines.

(3) Ensure that this policy is applied to pertinent documents.

c. Program Executive Officers and Direct Reporting Program

Managers. Ensure the execution of the provisions of this instruction within assigned programs.

d. Commander, Naval Air Systems Command

(1) Ensure the execution of the provisions of this instruction within assigned programs.

(2) As the Navy CASS Program manager, if new test requirements cannot be met by existing CASS capability, the CASS Program will identify Research and Development (R&D) resource requirements to accommodate the new test requirement.

e. Commander, Naval Sea Systems Command

(1) Ensure the execution of the provisions of this instruction within assigned programs.

(2) Serve the Chief of Naval Operations in the implementation of the TMDE and METCAL programs as the Lead Systems Command, unless otherwise directed.

f. Commander, Space and Naval Warfare Systems Command Ensure the execution of the provisions of this instruction within assigned programs.

Gerald A. Cann
Assistant Secretary of the Navy
(Research, Development and Acquisition)

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